

# SEQUENCE LISTING

<110> Soderlund, David M.  
Knipple, Douglas C.  
Ingles, Patricia J.

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INSECTICIDE-RESISTANT HOUSE FLIES

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Val Val Ile Ala Leu Ala Tyr Val Thr Met Gly Ile Asp Leu Gly Asn	
210	215 220
Leu Ala Ala Leu Arg Thr Phe Arg Val Leu Arg Ala Leu Lys Thr Val	
225	230 235 240
Ala Ile Val Pro Gly Leu Lys Thr Ile Val Gly Ala Val Ile Glu Ser	
245	250 255
Val Lys Asn Leu Arg Asp Val Ile Ile Leu Thr Met Phe Ser Leu Ser	
260	265 270
Val Phe Ala Leu Met Gly Leu Gln Ile Tyr Met Gly Val Leu Thr Gln	
275	280 285
Lys Cys Ile Lys Arg Phe Pro Leu Asp Gly Ser Trp Gly Asn Leu Thr	
290	295 300
Asp Glu Asn Trp Phe Leu His Asn Ser Asn Ser Ser Asn Trp Phe Thr	
305	310 315 320
Glu Asn Asp Gly Glu Ser Tyr Pro Val Cys Gly Asn Val Ser Gly Ala	
325	330 335
Gly Gln Cys Gly Glu Asp Tyr Val Cys Leu Gln Gly Phe Gly Pro Asn	
340	345 350
Pro Asn Tyr Asp Tyr Thr Ser Phe Asp Ser Phe Gly Trp Ala Phe Leu	
355	360 365
Ser Ala Phe Arg Leu Met Thr Gln Asp Phe Trp Glu Asp Leu Tyr Gln	
370	375 380
His Val Leu Gln Ala Ala Gly Pro Trp His Met Leu Phe Phe Ile Val	
385	390 395 400
Ile Ile Phe Leu Gly Ser Phe Tyr Leu Val Asn Leu Ile Leu Ala Ile	
405	410 415
Val Ala Met Ser Tyr Asp Glu Leu Gln Lys Lys Ala Glu Glu Glu Glu	
420	425 430

Ala Ala Glu Glu Glu Ala Ile Arg Glu Ala Glu Glu Ala Ala Ala Ala  
435 440 445

Lys Ala Ala Lys Leu Glu Glu Arg Ala Asn Val Ala Ala Gln Ala Ala  
450 455 460

Gln Asp Ala Ala Asp Ala Ala Ala Ala Ala Leu His Pro Glu Met Ala  
465 470 475 480

Lys Ser Pro Thr Tyr Ser Cys Ile Ser Tyr Glu Leu Phe Val Gly Gly  
485 490 495

Glu Lys Gly Asn Asp Asp Asn Asn Lys Glu Lys Met Ser Ile Arg Ser  
500 505 510

Val Glu Val Glu Ser Glu Ser Val Ser Val Ile Gln Arg Gln Pro Ala  
515 520 525

Pro Thr Thr Ala Pro Ala Thr Lys Val Arg Lys Val Ser Thr Thr Ser  
530 535 540

Leu Ser Leu Pro Gly Ser Pro Phe Asn Leu Arg Arg Gly Ser Arg Ser  
545 550 555 560

Ser His Lys Tyr Thr Ile Arg Asn Gly Arg Gly Arg Phe Gly Ile Pro  
565 570 575

Gly Ser Asp Arg Lys Pro Leu Val Leu Gln Thr Tyr Gln Asp Ala Gln  
580 585 590

Gln His Leu Pro Tyr Ala Asp Asp Ser Asn Ala Val Thr Pro Met Ser  
595 600 605

Glu Glu Asn Gly Ala Ile Ile Val Pro Ala Tyr Tyr Cys Asn Leu Gly  
610 615 620

Ser Arg His Ser Ser Tyr Thr Ser His Gln Ser Arg Ile Ser Tyr Thr  
625 630 635 640

Ser His Gly Asp Leu Leu Gly Gly Met Ala Ala Met Gly Ala Ser Thr  
645 650 655

Met Thr Lys Glu Ser Lys Leu Arg Ser Arg Asn Thr Arg Asn Gln Ser  
660 665 670

Ile Gly Ala Ala Thr Asn Gly Gly Ser Ser Thr Ala Gly Gly Gly Tyr  
675 680 685



Pro Asp Ala Asn His Lys Glu Gln Arg Asp Tyr Glu Met Gly Gln Asp  
 690 695 700  
 Tyr Thr Asp Glu Ala Gly Lys Ile Lys His His Asp Asn Pro Phe Ile  
 705 710 715 720  
 Glu Pro Val Gln Thr Gln Thr Val Val Asp Met Lys Asp Val Met Val  
 725 730 735  
 Leu Asn Asp Ile Ile Glu Gln Ala Ala Gly Arg His Ser Arg Ala Ser  
 740 745 750  
 Glu Arg Gly Glu Asp Asp Asp Glu Asp Gly Pro Thr Phe Lys Asp Ile  
 755 760 765  
 Ala Leu Glu Tyr Ile Leu Lys Gly Ile Glu Ile Phe Cys Val Trp Asp  
 770 775 780  
 Cys Cys Trp Val Trp Leu Lys Phe Gln Glu Trp Val Ser Phe Ile Val  
 785 790 795 800  
 Phe Asp Pro Phe Val Glu Leu Phe Ile Thr Leu Cys Ile Val Val Asn  
 805 810 815  
 Thr Met Phe Met Ala Met Asp His His Asp Met Asn Pro Glu Leu Glu  
 820 825 830  
 Lys Val Leu Lys Ser Gly Asn Tyr Phe Phe Thr Ala Thr Phe Ala Ile  
 835 840 845  
 Glu Ala Ser Met Lys Leu Met Ala Met Ser Pro Lys Tyr Tyr Phe Gln  
 850 855 860  
 Glu Gly Trp Asn Ile Phe Asp Phe Ile Ile Val Ala Leu Ser Leu Leu  
 865 870 875 880  
 Glu Leu Gly Leu Glu Gly Val Gln Gly Leu Ser Val Leu Arg Ser Phe  
 885 890 895  
 Arg Leu Leu Arg Val Phe Lys Leu Ala Lys Ser Trp Pro Thr Leu Asn  
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 Leu Leu Ile Ser Ile Met Gly Arg Thr Met Gly Ala Leu Gly Asn Leu  
 915 920 925  
 Thr Phe Val Leu Cys Ile Ile Ile Phe Ile Phe Ala Val Met Gly Met  
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Gln Leu Phe Gly Lys Asn Tyr Ile Asp His Lys Asp Arg Phe Lys Asp  
 945 950 955 960  
 His Glu Leu Pro Arg Trp Asn Phe Thr Asp Phe Met His Ser Phe Met  
 965 970 975  
 Ile Val Phe Arg Val Leu Cys Gly Glu Trp Ile Glu Ser Met Trp Asp  
 980 985 990  
 Cys Met Tyr Val Gly Asp Val Ser Cys Ile Pro Phe Phe Leu Ala Thr  
 995 1000 1005  
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 Leu Ser Asn Phe Gly Ser Ser Ser Leu Ser Ala Pro Thr Ala Asp Asn  
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 Asp Thr Asn Lys Ile Ala Glu Ala Phe Asn Arg Ile Ala Arg Phe Lys  
 1045 1050 1055  
 Asn Trp Val Lys Arg Asn Ile Ala Asp Cys Phe Lys Leu Ile Arg Asn  
 1060 1065 1070  
 Lys Leu Thr Asn Gln Ile Ser Asp Gln Pro Ser Glu His Gly Asp Asn  
 1075 1080 1085  
 Glu Leu Glu Leu Gly His Asp Glu Ile Met Gly Asp Gly Leu Ile Lys  
 1090 1095 1100  
 Lys Gly Met Lys Gly Glu Thr Gln Leu Glu Val Ala Ile Gly Asp Gly  
 1105 1110 1115 1120  
 Met Glu Phe Thr Ile His Gly Asp Met Lys Asn Asn Lys Pro Lys Lys  
 1125 1130 1135  
 Ser Lys Phe Met Asn Asn Thr Thr Met Ile Gly Asn Ser Ile Asn His  
 1140 1145 1150  
 Gln Asp Asn Arg Leu Glu His Glu Leu Asn His Arg Gly Leu Ser Ile  
 1155 1160 1165  
 Gln Asp Asp Asp Thr Ala Ser Ile Asn Ser Tyr Gly Ser His Lys Asn  
 1170 1175 1180  
 Arg Pro Phe Lys Asp Glu Ser His Lys Gly Ser Ala Glu Thr Ile Glu  
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Gly Glu Glu Lys Arg Asp Val Ser Lys Glu Asp Leu Gly Leu Asp Glu  
 1205 1210 1215  
 Glu Leu Asp Glu Glu Ala Glu Gly Asp Glu Gly Gln Leu Asp Gly Asp  
 1220 1225 1230  
 Ile Ile Ile His Ala Gln Asn Asp Asp Glu Ile Ile Asp Asp Tyr Pro  
 1235 1240 1245  
 Ala Asp Cys Phe Pro Asp Ser Tyr Tyr Lys Lys Phe Pro Ile Leu Ala  
 1250 1255 1260  
 Gly Asp Glu Asp Ser Pro Phe Trp Gln Gly Trp Gly Asn Leu Arg Leu  
 1265 1270 1275 1280  
 Lys Thr Phe Gln Leu Ile Glu Asn Lys Tyr Phe Glu Thr Ala Val Ile  
 1285 1290 1295  
 Thr Met Ile Leu Met Ser Ser Leu Ala Leu Ala Leu Glu Asp Val His  
 1300 1305 1310  
 Leu Pro Asp Arg Pro Val Met Gln Asp Ile Leu Tyr Tyr Met Asp Arg  
 1315 1320 1325  
 Ile Phe Thr Val Ile Phe Phe Leu Glu Met Leu Ile Lys Trp Leu Ala  
 1330 1335 1340  
 Leu Gly Phe Lys Val Tyr Phe Thr Asn Ala Trp Cys Trp Leu Asp Phe  
 1345 1350 1355 1360  
 Val Ile Val Met Leu Ser Leu Ile Asn Leu Val Ala Val Trp Ser Gly  
 1365 1370 1375  
 Leu Asn Asp Ile Ala Val Phe Arg Ser Met Arg Thr Leu Arg Ala Leu  
 1380 1385 1390  
 Arg Pro Leu Arg Ala Val Ser Arg Trp Glu Gly Met Lys Val Val Val  
 1395 1400 1405  
 Asn Ala Leu Val Gln Ala Ile Pro Ser Ile Phe Asn Val Leu Leu Val  
 1410 1415 1420  
 Cys Leu Ile Phe Trp Leu Ile Phe Ala Ile Met Gly Val Gln Leu Phe  
 1425 1430 1435 1440  
 Ala Gly Lys Tyr Phe Lys Cys Lys Asp Gly Asn Asp Thr Val Leu Ser  
 1445 1450 1455

His Glu Ile Ile Pro Asn Arg Asn Ala Cys Lys Ser Glu Asn Tyr Thr  
 1460 1465 1470  
 Trp Glu Asn Ser Ala Met Asn Phe Asp His Val Gly Asn Ala Tyr Leu  
 1475 1480 1485  
 Cys Leu Phe Gln Val Ala Thr Phe Lys Gly Trp Ile Gln Ile Met Asn  
 1490 1495 1500  
 Asp Ala Ile Asp Ser Arg Glu Val Asp Lys Gln Pro Ile Arg Glu Thr  
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 Asn Ile Tyr Met Tyr Leu Tyr Phe Val Phe Phe Ile Ile Phe Gly Ser  
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 Phe Phe Thr Leu Asn Leu Phe Ile Gly Val Ile Ile Asp Asn Phe Asn  
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 Glu Gln Lys Lys Lys Ala Gly Gly Ser Leu Glu Met Phe Met Thr Glu  
 1555 1560 1565  
 Asp Gln Lys Lys Tyr Tyr Asn Ala Met Lys Lys Met Gly Ser Lys Lys  
 1570 1575 1580  
 Pro Leu Lys Ala Ile Pro Arg Pro Arg Trp Arg Pro Gln Ala Ile Val  
 1585 1590 1595 1600  
 Phe Glu Ile Val Thr Asp Lys Lys Phe Asp Ile Ile Ile Met Leu Phe  
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 Ile Gly Leu Asn Met Phe Thr Met Thr Leu Asp Arg Tyr Asp Ala Ser  
 1620 1625 1630  
 Glu Ala Tyr Asn Asn Val Leu Asp Lys Leu Asn Gly Ile Phe Val Val  
 1635 1640 1645  
 Ile Phe Ser Gly Glu Cys Leu Leu Lys Ile Phe Ala Leu Arg Tyr His  
 1650 1655 1660  
 Tyr Phe Lys Glu Pro Trp Asn Leu Phe Asp Val Val Val Val Ile Leu  
 1665 1670 1675 1680  
 Ser Ile Leu Gly Leu Val Leu Ser Asp Ile Ile Glu Lys Tyr Phe Val  
 1685 1690 1695  
 Ser Pro Thr Leu Leu Arg Val Val Arg Val Ala Lys Val Gly Arg Val  
 1700 1705 1710

Leu Arg Leu Val Lys Gly Ala Lys Gly Ile Arg Thr Leu Leu Phe Ala  
 1715 1720 1725

Leu Ala Met Ser Leu Pro Ala Leu Phe Asn Ile Cys Leu Leu Leu Phe  
 1730 1735 1740

Leu Val Met Phe Ile Phe Ala Ile Phe Gly Met Ser Phe Phe Met His  
 1745 1750 1755 1760

Val Lys Glu Lys Ser Gly Ile Asn Ala Val Tyr Asn Phe Lys Thr Phe  
 1765 1770 1775

Gly Gln Ser Met Ile Leu Leu Phe Gln Met Ser Thr Ser Ala Gly Trp  
 1780 1785 1790

Asp Gly Val Leu Asp Ala Ile Ile Asn Glu Glu Asp Cys Asp Pro Pro  
 1795 1800 1805

Asp Asn Asp Lys Gly Tyr Pro Gly Asn Cys Gly Ser Ala Thr Val Gly  
 1810 1815 1820

Ile Thr Phe Leu Leu Ser Tyr Leu Val Ile Ser Phe Leu Ile Val Ile  
 1825 1830 1835 1840

Asn Met Tyr Ile Ala Val Ile Leu Glu Asn Tyr Ser Gln Ala Thr Glu  
 1845 1850 1855

Asp Val Gln Glu Gly Leu Thr Asp Asp Asp Tyr Asp Met Tyr Tyr Glu  
 1860 1865 1870

Ile Trp Gln Gln Phe Asp Pro Glu Gly Thr Gln Tyr Ile Arg Tyr Asp  
 1875 1880 1885

Gln Leu Ser Glu Phe Leu Asp Val Leu Glu Pro Pro Leu Gln Ile His  
 1890 1895 1900

Lys Pro Asn Lys Tyr Lys Ile Ile Ser Met Asp Met Pro Ile Cys Arg  
 1905 1910 1915 1920

Gly Asp Met Met Tyr Cys Val Asp Ile Leu Asp Ala Leu Thr Lys Asp  
 1925 1930 1935

Phe Phe Ala Arg Lys Gly Asn Pro Ile Glu Glu Thr Gly Glu Ile Gly  
 1940 1945 1950

Glu Ile Ala Ala Arg Pro Asp Thr Glu Gly Tyr Asp Pro Val Ser Ser  
 1955 1960 1965

Thr Leu Trp Arg Gln Arg Glu Glu Tyr Cys Ala Lys Leu Ile Gln Asn  
 1970 1975 1980

Ala Trp Arg Arg Tyr Lys Asn Gly Pro Pro Gln Glu Gly Asp Glu Gly  
 1985 1990 1995 2000

Glu Ala Ala Gly Gly Glu Asp Gly Ala Glu Gly Gly Glu Gly Glu Gly  
 2005 2010 2015

Gly Ser Gly Gly Gly Gly Gly Asp Asp Gly Gly Ser Ala Thr Gly Ala  
 2020 2025 2030

Thr Ala Ala Ala Gly Ala Thr Ser Pro Ser Asp Pro Asp Ala Gly Glu  
 2035 2040 2045

Ala Asp Gly Ala Ser Val Gly Gly Pro Leu Ser Pro Gly Cys Val Ser  
 2050 2055 2060

Gly Gly Ser Asn Gly Arg Gln Thr Ala Val Leu Val Glu Ser Asp Gly  
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Phe Val Thr Lys Asn Gly His Lys Val Val Ile His Ser Arg Ser Pro  
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Ser Ile Thr Ser Arg Thr Ala Asp Val  
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<212> PRT

<213> Musca domestica

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 1 5 10 15

Arg Pro Phe Thr Arg Glu Ser Leu Leu Gln Ile Glu Gln Arg Ile Ala  
 20 25 30

Glu His Glu Lys Gln Lys Glu Leu Glu Arg Lys Arg Ala Ala Glu Gly  
 35 40 45

Glu Gln Ile Arg Tyr Asp Asp Glu Asp Glu Asp Glu Gly Pro Gln Pro  
 50 55 60

Asp Pro Thr Leu Glu Gln Gly Val Pro Ile Pro Val Arg Met Gln Gly

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65		70		75		80
Ser Phe Pro Pro Glu Leu Ala Ser Thr Pro Leu Glu Asp Ile Asp Pro						
	85		90		95	
Phe Tyr Ser Asn Val Leu Thr Phe Val Val Ile Ser Lys Gly Lys Asp						
	100		105		110	
Ile Phe Arg Phe Ser Ala Ser Lys Ala Met Trp Leu Leu Asp Pro Phe						
	115		120		125	
Asn Pro Ile Arg Arg Val Ala Ile Tyr Ile Leu Val His Pro Leu Phe						
	130		135		140	
Ser Leu Phe Ile Ile Thr Thr Ile Leu Thr Asn Cys Ile Leu Met Ile						
	145		150		155	160
Met Pro Thr Thr Pro Thr Val Glu Ser Thr Glu Val Ile Phe Thr Gly						
		165		170		175
Ile Tyr Thr Phe Glu Ser Ala Val Lys Val Met Ala Arg Gly Phe Ile						
		180		185		190
Leu Cys Pro Phe Thr Tyr Leu Arg Asp Ala Trp Asn Trp Leu Asp Phe						
	195		200		205	
Val Val Ile Ala Leu Ala Tyr Val Thr Met Gly Ile Asp Leu Gly Asn						
	210		215		220	
Leu Ala Ala Leu Arg Thr Phe Arg Val Leu Arg Ala Leu Lys Thr Val						
	225		230		235	240
Ala Ile Val Pro Gly Leu Lys Thr Ile Val Gly Ala Val Ile Glu Ser						
		245		250		255
Val Lys Asn Leu Arg Asp Val Ile Ile Leu Thr Met Phe Ser Leu Ser						
		260		265		270
Val Phe Ala Leu Met Gly Leu Gln Ile Tyr Met Gly Val Leu Thr Gln						
	275		280		285	
Lys Cys Ile Lys Arg Phe Pro Leu Asp Gly Ser Trp Gly Asn Leu Thr						
	290		295		300	
Asp Glu Asn Trp Phe Leu His Asn Ser Asn Ser Ser Asn Trp Phe Thr						
	305		310		315	320
Glu Asn Asp Gly Glu Ser Tyr Pro Val Cys Gly Asn Val Ser Gly Ala						

	325		330		335												
Gly	Gln	Cys	Gly	Glu	Asp	Tyr	Val	Cys	Leu	Gln	Gly	Phe	Gly	Pro	Asn		
	340							345					350				
Pro	Asn	Tyr	Asp	Tyr	Thr	Ser	Phe	Asp	Ser	Phe	Gly	Trp	Ala	Phe	Leu		
	355						360					365					
Ser	Ala	Phe	Arg	Leu	Met	Thr	Gln	Asp	Phe	Trp	Glu	Asp	Leu	Tyr	Gln		
	370					375					380						
His	Val	Leu	Gln	Ala	Ala	Gly	Pro	Trp	His	Met	Leu	Phe	Phe	Ile	Val		
385					390					395					400		
Ile	Ile	Phe	Leu	Gly	Ser	Phe	Tyr	Leu	Val	Asn	Leu	Ile	Leu	Ala	Ile		
			405						410					415			
Val	Ala	Met	Ser	Tyr	Asp	Glu	Leu	Gln	Lys	Lys	Ala	Glu	Glu	Glu	Glu		
		420						425					430				
Ala	Ala	Glu	Glu	Glu	Ala	Ile	Arg	Glu	Ala	Glu	Glu	Ala	Ala	Ala	Ala		
		435					440					445					
Lys	Ala	Ala	Lys	Leu	Glu	Glu	Arg	Ala	Asn	Val	Ala	Ala	Gln	Ala	Ala		
	450					455				460							
Gln	Asp	Ala	Ala	Asp	Ala	Ala	Ala	Ala	Ala	Leu	His	Pro	Glu	Met	Ala		
465					470					475				480			
Lys	Ser	Pro	Thr	Tyr	Ser	Cys	Ile	Ser	Tyr	Glu	Leu	Phe	Val	Gly	Gly		
			485						490					495			
Glu	Lys	Gly	Asn	Asp	Asp	Asn	Asn	Lys	Glu	Lys	Met	Ser	Ile	Arg	Ser		
			500					505					510				
Val	Glu	Val	Glu	Ser	Glu	Ser	Val	Ser	Val	Ile	Gln	Arg	Gln	Pro	Ala		
	515						520					525					
Pro	Thr	Thr	Ala	Pro	Ala	Thr	Lys	Val	Arg	Lys	Val	Ser	Thr	Thr	Ser		
	530					535					540						
Leu	Ser	Leu	Pro	Gly	Ser	Pro	Phe	Asn	Leu	Arg	Arg	Gly	Ser	Arg	Ser		
545					550					555				560			
Ser	His	Lys	Tyr	Thr	Ile	Arg	Asn	Gly	Arg	Gly	Arg	Phe	Gly	Ile	Pro		
			565					570					575				
Gly	Ser	Asp	Arg	Lys	Pro	Leu	Val	Leu	Gln	Thr	Tyr	Gln	Asp	Ala	Gln		



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580	585	590
Gln His Leu Pro Tyr Ala Asp Asp Ser Asn Ala Val Thr Pro Met Ser		
595	600	605
Glu Glu Asn Gly Ala Ile Ile Val Pro Ala Tyr Tyr Cys Asn Leu Gly		
610	615	620
Ser Arg His Ser Ser Tyr Thr Ser His Gln Ser Arg Ile Ser Tyr Thr		
625	630	635
Ser His Gly Asp Leu Leu Gly Gly Met Ala Ala Met Gly Ala Ser Thr		
645	650	655
Met Thr Lys Glu Ser Lys Leu Arg Ser Arg Asn Thr Arg Asn Gln Ser		
660	665	670
Ile Gly Ala Ala Thr Asn Gly Gly Ser Ser Thr Ala Gly Gly Gly Tyr		
675	680	685
Pro Asp Ala Asn His Lys Glu Gln Arg Asp Tyr Glu Met Gly Gln Asp		
690	695	700
Tyr Thr Asp Glu Ala Gly Lys Ile Lys His His Asp Asn Pro Phe Ile		
705	710	715
Glu Pro Val Gln Thr Gln Thr Val Val Asp Met Lys Asp Val Met Val		
725	730	735
Leu Asn Asp Ile Ile Glu Gln Ala Ala Gly Arg His Ser Arg Ala Ser		
740	745	750
Glu Arg Gly Glu Asp Asp Asp Glu Asp Gly Pro Thr Phe Lys Asp Ile		
755	760	765
Ala Leu Glu Tyr Ile Leu Lys Gly Ile Glu Ile Phe Cys Val Trp Asp		
770	775	780
Cys Cys Trp Val Trp Leu Lys Phe Gln Glu Trp Val Ser Phe Ile Val		
785	790	795
Phe Asp Pro Phe Val Glu Leu Phe Ile Thr Leu Cys Ile Val Val Asn		
805	810	815
Thr Met Phe Met Ala Met Asp His His Asp Met Asn Pro Glu Leu Glu		
820	825	830
Lys Val Leu Lys Ser Gly Asn Tyr Phe Phe Thr Ala Thr Phe Ala Ile		

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835	840	845
Glu Ala Ser Met Lys Leu Met Ala Met Ser Pro Lys Tyr Tyr Phe Gln		
850	855	860
Glu Gly Trp Asn Ile Phe Asp Phe Ile Ile Val Ala Leu Ser Leu Leu		
865	870	875 880
Glu Leu Gly Leu Glu Gly Val Gln Gly Leu Ser Val Leu Arg Ser Phe		
885	890	895
Arg Leu Leu Arg Val Phe Lys Leu Ala Lys Ser Trp Pro Thr Leu Asn		
900	905	910
Leu Leu Ile Ser Ile Met Gly Arg Thr Met Gly Ala Leu Gly Asn Leu		
915	920	925
Thr Phe Val Leu Cys Ile Ile Ile Phe Ile Phe Ala Val Met Gly Met		
930	935	940
Gln Leu Phe Gly Lys Asn Tyr Ile Asp His Lys Asp Arg Phe Lys Asp		
945	950	955 960
His Glu Leu Pro Arg Trp Asn Phe Thr Asp Phe Met His Ser Phe Met		
965	970	975
Ile Val Phe Arg Val Leu Cys Gly Glu Trp Ile Glu Ser Met Trp Asp		
980	985	990
Cys Met Tyr Val Gly Asp Val Ser Cys Ile Pro Phe Phe Leu Ala Thr		
995	1000	1005
Val Val Ile Gly Asn Phe Val Val Leu Asn Leu Phe Leu Ala Leu Leu		
1010	1015	1020
Leu Ser Asn Phe Gly Ser Ser Ser Leu Ser Ala Pro Thr Ala Asp Asn		
1025	1030	1035 1040
Asp Thr Asn Lys Ile Ala Glu Ala Phe Asn Arg Ile Ala Arg Phe Lys		
1045	1050	1055
Asn Trp Val Lys Arg Asn Ile Ala Asp Cys Phe Lys Leu Ile Arg Asn		
1060	1065	1070
Lys Leu Thr Asn Gln Ile Ser Asp Gln Pro Ser Glu His Gly Asp Asn		
1075	1080	1085
Glu Leu Glu Leu Gly His Asp Glu Ile Met Gly Asp Gly Leu Ile Lys		



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1345	1350	1355	1360
Val Ile Val Met Leu Ser Leu Ile Asn Leu Val Ala Val Trp Ser Gly			
1365	1370	1375	
Leu Asn Asp Ile Ala Val Phe Arg Ser Met Arg Thr Leu Arg Ala Leu			
1380	1385	1390	
Arg Pro Leu Arg Ala Val Ser Arg Trp Glu Gly Met Lys Val Val Val			
1395	1400	1405	
Asn Ala Leu Val Gln Ala Ile Pro Ser Ile Phe Asn Val Leu Leu Val			
1410	1415	1420	
Cys Leu Ile Phe Trp Leu Ile Phe Ala Ile Met Gly Val Gln Leu Phe			
1425	1430	1435	1440
Ala Gly Lys Tyr Phe Lys Cys Lys Asp Gly Asn Asp Thr Val Leu Ser			
1445	1450	1455	
His Glu Ile Ile Pro Asn Arg Asn Ala Cys Lys Ser Glu Asn Tyr Thr			
1460	1465	1470	
Trp Glu Asn Ser Ala Met Asn Phe Asp His Val Gly Asn Ala Tyr Leu			
1475	1480	1485	
Cys Leu Phe Gln Val Ala Thr Phe Lys Gly Trp Ile Gln Ile Met Asn			
1490	1495	1500	
Asp Ala Ile Asp Ser Arg Glu Val Asp Lys Gln Pro Ile Arg Glu Thr			
1505	1510	1515	1520
Asn Ile Tyr Met Tyr Leu Tyr Phe Val Phe Phe Ile Ile Phe Gly Ser			
1525	1530	1535	
Phe Phe Thr Leu Asn Leu Phe Ile Gly Val Ile Ile Asp Asn Phe Asn			
1540	1545	1550	
Glu Gln Lys Lys Lys Ala Gly Gly Ser Leu Glu Met Phe Met Thr Glu			
1555	1560	1565	
Asp Gln Lys Lys Tyr Tyr Asn Ala Met Lys Lys Met Gly Ser Lys Lys			
1570	1575	1580	
Pro Leu Lys Ala Ile Pro Arg Pro Arg Trp Arg Pro Gln Ala Ile Val			
1585	1590	1595	1600
Phe Glu Ile Val Thr Asp Lys Lys Phe Asp Ile Ile Ile Met Leu Phe			

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1605	1610	1615
Ile Gly Leu Asn Met Phe Thr Met Thr Leu Asp Arg Tyr Asp Ala Ser		
1620	1625	1630
Glu Ala Tyr Asn Asn Val Leu Asp Lys Leu Asn Gly Ile Phe Val Val		
1635	1640	1645
Ile Phe Ser Gly Glu Cys Leu Leu Lys Ile Phe Ala Leu Arg Tyr His		
1650	1655	1660
Tyr Phe Lys Glu Pro Trp Asn Leu Phe Asp Val Val Val Val Ile Leu		
1665	1670	1675
Ser Ile Leu Gly Leu Val Leu Ser Asp Ile Ile Glu Lys Tyr Phe Val		
1685	1690	1695
Ser Pro Thr Leu Leu Arg Val Val Arg Val Ala Lys Val Gly Arg Val		
1700	1705	1710
Leu Arg Leu Val Lys Gly Ala Lys Gly Ile Arg Thr Leu Leu Phe Ala		
1715	1720	1725
Leu Ala Met Ser Leu Pro Ala Leu Phe Asn Ile Cys Leu Leu Leu Phe		
1730	1735	1740
Leu Val Met Phe Ile Phe Ala Ile Phe Gly Met Ser Phe Phe Met His		
1745	1750	1755
Val Lys Glu Lys Ser Gly Ile Asn Ala Val Tyr Asn Phe Lys Thr Phe		
1765	1770	1775
Gly Gln Ser Met Ile Leu Leu Phe Gln Met Ser Thr Ser Ala Gly Trp		
1780	1785	1790
Asp Gly Val Leu Asp Ala Ile Ile Asn Glu Glu Asp Cys Asp Pro Pro		
1795	1800	1805
Asp Asn Asp Lys Gly Tyr Pro Gly Asn Cys Gly Ser Ala Thr Val Gly		
1810	1815	1820
Ile Thr Phe Leu Leu Ser Tyr Leu Val Ile Ser Phe Leu Ile Val Ile		
1825	1830	1835
Asn Met Tyr Ile Ala Val Ile Leu Glu Asn Tyr Ser Gln Ala Thr Glu		
1845	1850	1855
Asp Val Gln Glu Gly Leu Thr Asp Asp Asp Tyr Asp Met Tyr Tyr Glu		

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1860	1865	1870
Ile Trp Gln Gln Phe Asp Pro Glu Gly Thr Gln Tyr Ile Arg Tyr Asp		
1875	1880	1885
Gln Leu Ser Glu Phe Leu Asp Val Leu Glu Pro Pro Leu Gln Ile His		
1890	1895	1900
Lys Pro Asn Lys Tyr Lys Ile Ile Ser Met Asp Met Pro Ile Cys Arg		
1905	1910	1915
Gly Asp Met Met Tyr Cys Val Asp Ile Leu Asp Ala Leu Thr Lys Asp		
1925	1930	1935
Phe Phe Ala Arg Lys Gly Asn Pro Ile Glu Glu Thr Gly Glu Ile Gly		
1940	1945	1950
Glu Ile Ala Ala Arg Pro Asp Thr Glu Gly Tyr Asp Pro Val Ser Ser		
1955	1960	1965
Thr Leu Trp Arg Gln Arg Glu Glu Tyr Cys Ala Lys Leu Ile Gln Asn		
1970	1975	1980
Ala Trp Arg Arg Tyr Lys Asn Gly Pro Pro Gln Glu Gly Asp Glu Gly		
1985	1990	1995
Glu Ala Ala Gly Gly Glu Asp Gly Ala Glu Gly Gly Glu Gly Glu Gly		
2005	2010	2015
Gly Ser Gly Gly Gly Gly Asp Asp Asp Gly Gly Ser Ala Thr Ala Ala		
2020	2025	2030
Gly Ala Thr Ser Pro Thr Asp Pro Asp Ala Gly Glu Ala Asp Gly Ala		
2035	2040	2045
Ser Ala Gly Asn Gly Gly Gly Pro Leu Ser Pro Gly Cys Val Ser Gly		
2050	2055	2060
Gly Ser Asn Gly Arg Gln Thr Ala Val Leu Val Glu Ser Asp Gly Phe		
2065	2070	2075
Val Thr Lys Asn Gly His Lys Val Val Ile His Ser Arg Ser Pro Ser		
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Ile Thr Ser Arg Thr Ala Asp Val		
2100		

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<220>

<223> Description of Artificial Sequence: Synthetic  
primers for PCR amplification of Vssc1 cDNAs.

<400> 5

cggttgggct ttcctgtc

18

<210> 6

<211> 26

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic  
primers for PCR amplification of Vssc1 cDNAs.

<220>

<221> unsure

<222> (21)

<223> N at position 21 is either A, C, G, or T

<400> 6

gggaattcra adatrttcca nccytc

26

<210> 7

<211> 23

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic  
primers for PCR amplification of Vssc1 cDNAs.

<220>

<221> unsure

<222> (18)

<223> N at position 18 is either A, C, G, or T

<400> 7

cccgargaya thgaycynta yta

23

<210> 8

<211> 18

<212> DNA  
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<220>

<223> Description of Artificial Sequence: Synthetic  
primers for PCR amplification of Vssc1 cDNAs.

<400> 8  
cgtatcgcct cctcctcg

18

<210> 9  
<211> 29  
<212> DNA  
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<220>

<223> Description of Artificial Sequence: Synthetic  
primers for PCR amplification of Vssc1 cDNAs.

<220>

<221> unsure

<222> (17)

<223> N at any position in this sequence is A, C, G, or  
T

<400> 9  
gggtctagat httygcnath ttyggnatg

29

<210> 10  
<211> 27  
<212> DNA  
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<220>

<223> Description of Artificial Sequence: Synthetic  
primers for PCR amplification of Vssc1 cDNAs.

<220>

<221> unsure

<222> (10)

<223> N at position 10 is either A, C, G, or T

<400> 10  
ggggaattcn ggrtcraayt gytgccca

27

<210> 11  
<211> 27  
<212> DNA



<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic primers for PCR amplification of Vssc1 cDNAs.

<220>

<221> unsure

<222> (13)

<223> N at position 13 is either A, C, G, or T

<400> 11

gggtctagar gancaraara artayta

27

<210> 12

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic primers for PCR amplification of Vssc1 cDNAs.

<400> 12

tcatactttg gcccaatgtc

20

<210> 13

<211> 21

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic primers for PCR amplification of Vssc1 cDNAs.

<400> 13

cccgaattag agaaggtgct g

21

<210> 14

<211> 21

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic primers for PCR amplification of Vssc1 cDNAs.

<400> 14

actattgctt gtggtcgcca c 21

<210> 15  
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<212> DNA  
<213> Artificial Sequence

<220>  
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<220>  
<221> unsure  
<222> (5)  
<223> N at any position in this sequence is A, C, G, or  
T

<400> 15  
catcnttrgc ngcntagacn atgac 25

<210> 16  
<211> 21  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Synthetic  
primers for PCR amplification of Vssc1 cDNAs.

<400> 16  
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<210> 17  
<211> 21  
<212> DNA  
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<220>  
<223> Description of Artificial Sequence: Synthetic  
primers for PCR amplification of Vssc1 cDNAs.

<400> 17  
cgtttctcct ttcatatcta g 21

<210> 18  
<211> 25  
<212> DNA  
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<220>

<223> Description of Artificial Sequence: Synthetic  
primers for PCR amplification of Vssc1 cDNAs.

<220>

<221> unsure

<222> (11)

<223> N at any position in this sequence is A, C, G, or  
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<400> 18

ggagbgbgg nckbggnckn gctca

25

<210> 19

<211> 2100

<212> PRT

<213> Drosophila melanogaster

<400> 19

Met Thr Glu Asp Ser Asp Ser Ile Ser Glu Glu Glu Arg Ser Leu Phe  
1 5 10 15

Arg Pro Phe Thr Arg Glu Ser Leu Val Gln Ile Glu Gln Arg Ile Ala  
20 25 30

Ala Glu His Glu Lys Gln Lys Glu Leu Glu Arg Lys Arg Ala Glu Gly  
35 40 45

Glu Val Pro Arg Tyr Gly Arg Lys Lys Lys Gln Lys Glu Ile Arg Tyr  
50 55 60

Asp Asp Glu Asp Glu Asp Glu Gly Pro Gln Pro Asp Pro Thr Leu Glu  
65 70 75 80

Gln Gly Val Pro Ile Pro Val Arg Leu Gln Gly Ser Phe Pro Pro Glu  
85 90 95

Leu Ala Ser Thr Pro Leu Glu Asp Ile Asp Pro Tyr Tyr Ser Asn Val  
100 105 110

Leu Thr Phe Val Val Val Ser Lys Gly Lys Asp Ile Phe Arg Phe Ser  
115 120 125

Ala Ser Lys Ala Met Trp Met Leu Asp Pro Phe Asn Pro Ile Arg Arg  
130 135 140

Val Ala Ile Tyr Ile Leu Val His Pro Leu Phe Ser Leu Phe Ile Ile

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145		150		155		160
Thr Thr Ile Leu Val Asn Cys Ile Leu Met Ile Met Pro Thr Thr Pro						
	165		170		175	
Thr Val Glu Ser Thr Glu Val Ile Phe Thr Gly Ile Tyr Thr Phe Glu						
	180		185		190	
Ser Ala Val Lys Val Met Ala Arg Gly Phe Ile Leu Cys Pro Phe Thr						
	195		200		205	
Tyr Leu Arg Asp Ala Trp Asn Trp Leu Asp Phe Val Val Ile Ala Leu						
	210		215		220	
Ala Tyr Val Thr Met Gly Ile Asp Leu Gly Asn Leu Ala Ala Leu Arg						
	225		230		235	240
Thr Phe Arg Val Leu Arg Ala Leu Lys Thr Val Ala Ile Val Pro Gly						
	245		250		255	
Leu Lys Thr Ile Val Gly Ala Val Ile Glu Ser Val Lys Asn Leu Arg						
	260		265		270	
Asp Val Ile Ile Leu Thr Met Phe Ser Leu Ser Val Phe Ala Leu Met						
	275		280		285	
Gly Leu Gln Ile Tyr Met Gly Val Leu Thr Glu Lys Cys Ile Lys Lys						
	290		295		300	
Phe Pro Leu Asp Gly Ser Trp Gly Asn Leu Thr Asp Glu Asn Trp Asp						
	305		310		315	320
Tyr His Asn Arg Asn Ser Ser Asn Trp Tyr Ser Glu Asp Glu Gly Ile						
	325		330		335	
Ser Phe Pro Leu Cys Gly Asn Ile Ser Gly Ala Gly Gln Cys Asp Asp						
	340		345		350	
Asp Tyr Val Cys Leu Gln Gly Phe Gly Pro Asn Pro Asn Tyr Gly Tyr						
	355		360		365	
Thr Ser Phe Asp Ser Phe Gly Trp Ala Phe Leu Ser Ala Phe Arg Leu						
	370		375		380	
Met Thr Gln Asp Phe Trp Glu Asp Leu Tyr Gln Leu Val Leu Arg Ala						
	385		390		395	400
Ala Gly Pro Trp His Met Leu Phe Phe Ile Val Ile Ile Phe Leu Gly						

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	405		410		415
Ser Phe Tyr Leu Val Asn Leu Ile Leu Ala Ile Val Ala Met Ser Tyr					
	420		425		430
Asp Glu Leu Gln Arg Lys Ala Glu Glu Glu Glu Ala Ala Glu Glu Glu					
	435		440		445
Ala Ile Arg Glu Ala Glu Glu Ala Ala Ala Ala Lys Ala Ala Lys Leu					
	450		455		460
Glu Glu Arg Ala Asn Ala Gln Ala Gln Ala Ala Ala Asp Ala Ala Ala					
	465		470		480
Ala Glu Glu Ala Ala Leu His Pro Glu Met Ala Lys Ser Pro Thr Tyr					
	485		490		495
Ser Cys Ile Ser Tyr Glu Leu Phe Val Gly Gly Glu Lys Gly Asn Asp					
	500		505		510
Asp Asn Asn Lys Glu Lys Met Ser Ile Arg Ser Val Glu Val Glu Ser					
	515		520		525
Glu Ser Val Ser Val Ile Gln Arg Gln Pro Ala Pro Thr Thr Ala His					
	530		535		540
Gln Ala Thr Lys Val Arg Lys Val Ser Thr Thr Ser Leu Ser Leu Pro					
	545		550		560
Gly Ser Pro Phe Asn Ile Arg Arg Gly Ser Arg Ser Ser His Lys Tyr					
	565		570		575
Thr Ile Arg Asn Gly Arg Gly Arg Phe Gly Ile Pro Gly Ser Asp Arg					
	580		585		590
Lys Pro Leu Val Leu Ser Thr Tyr Gln Asp Ala Gln Gln His Leu Pro					
	595		600		605
Tyr Ala Asp Asp Ser Asn Ala Val Thr Pro Met Ser Glu Glu Asn Gly					
	610		615		620
Ala Ile Ile Val Pro Val Tyr Tyr Gly Asn Leu Gly Ser Arg His Ser					
	625		630		640
Ser Tyr Thr Ser His Gln Ser Arg Ile Ser Tyr Thr Ser His Gly Asp					
	645		650		655
Leu Leu Gly Gly Met Ala Val Met Gly Val Ser Thr Met Thr Lys Glu					

660					665					670						
Ser	Lys	Leu	Arg	Asn	Arg	Asn	Thr	Arg	Asn	Gln	Ser	Val	Gly	Ala	Thr	
675					680					685						
Asn	Gly	Gly	Thr	Thr	Cys	Leu	Asp	Thr	Asn	His	Lys	Leu	Asp	His	Arg	
690					695					700						
Asp	Tyr	Glu	Ile	Gly	Leu	Glu	Cys	Thr	Asp	Glu	Ala	Gly	Lys	Ile	Lys	
705					710					715					720	
His	His	Asp	Asn	Pro	Phe	Ile	Glu	Pro	Val	Gln	Thr	Gln	Thr	Val	Val	
725					730					735						
Asp	Met	Lys	Asp	Val	Met	Val	Leu	Asn	Asp	Ile	Ile	Glu	Gln	Ala	Ala	
740					745					750						
Gly	Arg	His	Ser	Arg	Ala	Ser	Asp	Arg	Gly	Glu	Asp	Asp	Asp	Glu	Asp	
755					760					765						
Gly	Pro	Thr	Phe	Lys	Asp	Lys	Ala	Leu	Glu	Val	Ile	Leu	Lys	Gly	Ile	
770					775					780						
Asp	Val	Phe	Cys	Val	Trp	Asp	Cys	Cys	Trp	Val	Trp	Leu	Lys	Phe	Gln	
785					790					795					800	
Glu	Trp	Val	Ser	Leu	Ile	Val	Phe	Asp	Pro	Phe	Val	Glu	Leu	Phe	Ile	
805					810					815						
Thr	Leu	Cys	Ile	Val	Val	Asn	Thr	Met	Phe	Met	Ala	Met	Asp	His	His	
820					825					830						
Asp	Met	Asn	Lys	Glu	Met	Glu	Arg	Val	Leu	Lys	Ser	Gly	Asn	Tyr	Phe	
835					840					845						
Phe	Thr	Ala	Thr	Phe	Ala	Ile	Glu	Ala	Thr	Met	Lys	Leu	Met	Ala	Met	
850					855					860						
Ser	Pro	Lys	Tyr	Tyr	Phe	Gln	Glu	Gly	Trp	Asn	Ile	Phe	Asp	Phe	Ile	
865					870					875					880	
Ile	Val	Ala	Leu	Ser	Leu	Leu	Glu	Leu	Gly	Leu	Glu	Gly	Val	Gln	Gly	
885					890					895						
Leu	Ser	Val	Leu	Arg	Ser	Phe	Arg	Leu	Leu	Arg	Val	Phe	Lys	Leu	Ala	
900					905					910						
Lys	Ser	Trp	Pro	Thr	Leu	Asn	Leu	Leu	Ile	Ser	Ile	Met	Gly	Arg	Thr	

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915 920 925

Met Gly Ala Leu Gly Asn Leu Thr Phe Val Leu Cys Ile Ile Ile Phe  
930 935 940

Ile Phe Ala Val Met Gly Met Gln Leu Phe Gly Lys Asn Tyr His Asp  
945 950 955 960

His Lys Asp Arg Phe Pro Asp Gly Asp Leu Pro Arg Trp Asn Phe Thr  
965 970 975

Asp Phe Met His Ser Phe Met Ile Val Phe Arg Val Leu Cys Gly Glu  
980 985 990

Trp Ile Glu Ser Met Trp Asp Cys Met Tyr Val Gly Asp Val Ser Cys  
995 1000 1005

Ile Pro Phe Phe Leu Ala Thr Val Val Ile Gly Asn Leu Val Val Leu  
1010 1015 1020

Asn Leu Phe Leu Ala Leu Leu Leu Ser Asn Phe Gly Ser Ser Ser Leu  
1025 1030 1035 1040

Ser Ala Pro Thr Ala Asp Asn Asp Thr Asn Lys Ile Ala Glu Ala Phe  
1045 1050 1055

Asn Arg Ile Gly Arg Phe Lys Ser Trp Val Lys Arg Asn Ile Ala Asp  
1060 1065 1070

Cys Phe Lys Leu Ile Arg Asn Lys Leu Thr Asn Gln Ile Ser Asp Gln  
1075 1080 1085

Pro Ser Glu His Gly Asp Asn Glu Leu Glu Leu Gly His Asp Glu Ile  
1090 1095 1100

Leu Ala Asp Gly Leu Ile Lys Lys Gly Ile Lys Glu Gln Thr Gln Leu  
1105 1110 1115 1120

Glu Val Ala Ile Gly Asp Gly Met Glu Phe Thr Ile His Gly Asp Met  
1125 1130 1135

Lys Asn Asn Lys Pro Lys Lys Ser Lys Tyr Leu Asn Asn Ala Thr Asp  
1140 1145 1150

Asp Asp Thr Ala Ser Ile Asn Ser Tyr Gly Ser His Lys Asn Arg Pro  
1155 1160 1165

Phe Lys Asp Glu Ser His Lys Gly Ser Ala Glu Thr Met Glu Gly Glu

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1170	1175	1180
Glu Lys Arg Asp Ala Ser Lys Glu Asp Leu Gly Leu Asp Glu Glu Leu		
1185	1190	1195 1200
Asp Glu Glu Gly Glu Cys Glu Glu Gly Pro Leu Asp Gly Asp Ile Ile		
1205	1210	1215
Ile His Ala His Asp Glu Asp Ile Leu Asp Glu Tyr Pro Ala Asp Cys		
1220	1225	1230
Cys Pro Asp Ser Tyr Tyr Lys Lys Phe Pro Ile Leu Ala Gly Asp Asp		
1235	1240	1245
Asp Ser Pro Phe Trp Gln Gly Trp Gly Asn Leu Arg Leu Lys Thr Phe		
1250	1255	1260
Arg Leu Ile Glu Asp Lys Tyr Phe Glu Thr Ala Val Ile Thr Met Ile		
1265	1270	1275 1280
Leu Met Ser Ser Leu Ala Leu Ala Leu Glu Asp Val His Leu Pro Gln		
1285	1290	1295
Arg Pro Ile Leu Gln Asp Ile Leu Tyr Tyr Met Asp Arg Ile Phe Thr		
1300	1305	1310
Val Ile Phe Phe Leu Glu Met Leu Ile Lys Trp Leu Ala Leu Gly Phe		
1315	1320	1325
Lys Val Tyr Leu Thr Asn Ala Trp Cys Trp Leu Asp Phe Val Ile Val		
1330	1335	1340
Met Val Ser Leu Ile Asn Phe Val Ala Ser Leu Val Gly Ala Gly Gly		
1345	1350	1355 1360
Ile Gln Ala Phe Lys Thr Met Arg Thr Leu Arg Ala Leu Arg Pro Leu		
1365	1370	1375
Arg Ala Met Ser Arg Met Gln Gly Met Arg Val Val Val Asn Ala Leu		
1380	1385	1390
Val Gln Ala Ile Pro Ser Ile Phe Asn Val Leu Leu Val Cys Leu Ile		
1395	1400	1405
Phe Trp Leu Ile Phe Ala Ile Met Gly Val Gln Leu Phe Ala Gly Lys		
1410	1415	1420
Tyr Phe Lys Cys Glu Asp Met Asn Gly Thr Lys Leu Ser His Glu Ile		



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1425	1430	1435	1440
Ile Pro Asn Arg Asn Ala Cys Glu Ser Glu Asn Tyr Thr Trp Val Asn			
1445	1450	1455	
Ser Ala Met Asn Phe Asp His Val Gly Asn Ala Tyr Leu Cys Leu Phe			
1460	1465	1470	
Gln Val Ala Thr Phe Lys Gly Trp Ile Gln Ile Met Asn Asp Ala Ile			
1475	1480	1485	
Asp Ser Arg Glu Val Asp Lys Gln Pro Ile Arg Glu Thr Asn Ile Tyr			
1490	1495	1500	
Met Tyr Leu Tyr Phe Val Phe Phe Ile Ile Phe Gly Ser Phe Phe Thr			
1505	1510	1515	1520
Leu Asn Leu Phe Ile Gly Val Ile Ile Asp Asn Phe Asn Glu Gln Lys			
1525	1530	1535	
Lys Lys Ala Gly Gly Ser Leu Glu Met Phe Met Thr Glu Asp Gln Lys			
1540	1545	1550	
Lys Tyr Tyr Ser Ala Met Lys Lys Met Gly Ser Lys Lys Pro Leu Lys			
1555	1560	1565	
Ala Ile Pro Arg Pro Arg Trp Arg Pro Gln Ala Ile Val Phe Glu Ile			
1570	1575	1580	
Val Thr Asp Lys Lys Phe Asp Ile Ile Ile Met Leu Phe Ile Gly Leu			
1585	1590	1595	1600
Asn Met Phe Thr Met Thr Leu Asp Arg Tyr Asp Ala Ser Asp Thr Tyr			
1605	1610	1615	
Asn Ala Val Leu Asp Tyr Leu Asn Ala Ile Phe Val Val Ile Phe Ser			
1620	1625	1630	
Ser Glu Cys Leu Leu Lys Ile Phe Ala Leu Arg Tyr His Tyr Phe Ile			
1635	1640	1645	
Glu Pro Trp Asn Leu Phe Asp Val Val Val Val Ile Leu Ser Ile Leu			
1650	1655	1660	
Gly Leu Val Leu Ser Asp Ile Ile Glu Lys Tyr Phe Val Ser Pro Thr			
1665	1670	1675	1680
Leu Leu Arg Val Val Arg Val Ala Lys Val Gly Arg Val Leu Arg Leu			

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1685	1690	1695
Val Lys Gly Ala Lys Gly Ile Arg Thr Leu Leu Phe Ala Leu Ala Met		
1700	1705	1710
Ser Leu Pro Ala Leu Phe Asn Ile Cys Leu Leu Leu Phe Leu Val Met		
1715	1720	1725
Phe Ile Phe Ala Ile Phe Gly Met Ser Phe Phe Met His Val Lys Glu		
1730	1735	1740
Lys Ser Gly Ile Asn Asp Val Tyr Asn Phe Lys Thr Phe Gly Gln Ser		
1745	1750	1755
Met Ile Leu Leu Phe Gln Met Ser Thr Ser Ala Gly Trp Asp Gly Val		
1765	1770	1775
Leu Asp Ala Ile Ile Asn Glu Glu Ala Cys Asp Pro Pro Asp Asn Asp		
1780	1785	1790
Lys Gly Tyr Pro Gly Asn Cys Gly Ser Ala Thr Val Gly Ile Thr Phe		
1795	1800	1805
Leu Leu Ser Tyr Leu Val Ile Ser Phe Leu Ile Val Ile Asn Met Tyr		
1810	1815	1820
Ile Ala Val Ile Leu Glu Asn Tyr Ser Gln Ala Thr Glu Asp Val Gln		
1825	1830	1835
Glu Gly Leu Thr Asp Asp Asp Tyr Asp Met Tyr Tyr Glu Ile Trp Gln		
1845	1850	1855
Gln Phe Asp Pro Glu Gly Thr Gln Tyr Ile Arg Tyr Asp Gln Leu Ser		
1860	1865	1870
Glu Phe Leu Asp Val Leu Glu Pro Pro Leu Gln Ile His Lys Pro Asn		
1875	1880	1885
Lys Tyr Lys Ile Ile Ser Met Asp Ile Pro Ile Cys Arg Gly Asp Leu		
1890	1895	1900
Met Tyr Cys Val Asp Ile Leu Asp Ala Leu Thr Lys Asp Phe Phe Ala		
1905	1910	1915
Arg Lys Gly Asn Pro Ile Glu Glu Thr Gly Glu Ile Gly Glu Ile Ala		
1925	1930	1935
Ala Arg Pro Asp Thr Glu Gly Tyr Glu Pro Val Ser Ser Thr Leu Trp		

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1940	1945	1950
Arg Gln Arg Glu Glu Tyr Cys Ala Arg Leu Ile Gln His Ala Trp Arg		
1955	1960	1965
Lys His Lys Ala Arg Gly Glu Gly Gly Gly Ser Phe Glu Pro Asp Thr		
1970	1975	1980
Asp His Gly Asp Gly Gly Asp Pro Asp Ala Gly Asp Pro Ala Pro Asp		
1985	1990	1995 2000
Glu Ala Thr Asp Gly Asp Ala Pro Ala Gly Gly Asp Gly Ser Val Asn		
2005	2010	2015
Gly Thr Ala Glu Gly Ala Ala Asp Ala Asp Glu Ser Asn Val Asn Ser		
2020	2025	2030
Pro Gly Glu Asp Ala Ala Ala Ala Ala Ala Ala Ala Ala Ala Ala		
2035	2040	2045
Ala Ala Gly Thr Thr Thr Ala Gly Ser Pro Gly Ala Gly Ser Ala Gly		
2050	2055	2060
Arg Gln Thr Ala Val Leu Val Glu Ser Asp Gly Phe Val Thr Lys Asn		
2065	2070	2075 2080
Gly His Lys Val Val Ile His Ser Arg Ser Pro Ser Ile Thr Ser Arg		
2085	2090	2095
Thr Ala Asp Val		
2100		